Kramer Electronics, Ltd.

USER MANUAL

Personal Stereo Amplifier

Model:

902

IMPORTANT: Before proceeding, please read paragraph entitled "Unpacking and Contents"

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1 INTRODUCTION

Congratulations on your purchase of this Kramer amplifier. Since 1981, Kramer has been dedicated to the development and manufacture of high quality video/audio equipment. The Kramer line has become an integral part of many of the best production and presentation facilities around the world. In recent years, Kramer has redesigned and upgraded most of the line, making the best even better. Kramer's line of professional video/audio electronics is one of the most versatile and complete available, and is a true leader in terms of quality, workmanship, price/performance ratio and innovation. In addition to the Kramer line of high quality mixers, such as the one you have just purchased, Kramer also offers a full line of high quality distribution amplifiers, switchers, processors, interfaces, controllers and computer-related products.

This manual includes configuration, operation and option information for the 902 – Personal Stereo Amplifier.

1.1 A Word on Audio Amplifiers

Audio signals, in order to be heard by our ears, should be amplified in order to be able to drive headphones or loudspeakers. Line level audio signals traveling within an audio system or generated from a PC are usually too weak to drive large loudspeakers and need further amplification. A good quality audio amplifier for personal, PC, or Presentation use should have the following features:

1. The output of the amplifier should be a high quality signal (Hi-Fi).
2. The amplifier should have several optional inputs that the user can select for amplification.
3. The user should be provided with all audio parameters controls – Bass, Treble, Midrange tone controls, Volume (audio output level), stereo signal Balance and Loudness control.
4. The amplifier should have speaker and headphones outputs.
5. The output levels should be sufficient to drive the loudspeakers with a reasonable volume, filling a medium sized room with ample sound.
6. The machine should be small in dimensions for easy installation and control.
7. Power supply should flexible.

All of those functions are provided with the Kramer 902 Personal Stereo Amplifier.

1.2 Factors Affecting Quality of Results

There are many factors affecting the quality of results when signals are transmitted from a source to an acceptor:

- **Connection cables** - Low quality cables are susceptible to interference; they degrade signal quality due to poor matching and cause elevated noise levels. They should be of the best quality.
- **Sockets and connectors of the sources and acceptors** - So often ignored, they should be of highest quality, since "Zero Ohm" connection resistance is the target. Sockets and connectors must also match the required impedance. Cheap, low quality connectors tend to rust, thus causing breaks in the signal path.
- **Amplifying circuitry** - Must provide quality performance when the desired end result is high linearity, low distortion and low noise operation.
- **Interference from neighboring electrical appliances** - They can have an adverse effect on signal quality. Balanced audio lines are less prone to interference, but unbalanced audio should be installed far from any mains power cables, electric motors, transmitters, etc. even when the cables are shielded.

2 HOW DO I GET STARTED?

The fastest way to get started is to take your time and do everything right the first time. Taking 15 minutes to read the manual may save you a few hours later.

3 UNPACKING AND CONTENTS

The items contained in your Kramer switcher package are listed below. Please save the original box and packaging materials for possible future shipment.

- The 902 machine
- DC wall transformer (power supply)
- This User Manual
- Kramer concise product catalog/CD
- Rubber feet
- Mounting brackets

3.1 Optional Accessories

The following accessories, which are available from Kramer, can enhance implementation of your machine. For information regarding cables and additional accessories, contact your Kramer dealer.

- **VM-50H** – for adding additional headphone outputs - a high quality 1:5 stereo headphone distribution amplifier using ¼" TRS connectors. It accepts one stereo headphone or line input source, and distributes it to five identical outputs, providing each output with an independent level control. Apart from its standard use, the **VM-50H** can also drive low impedance headphones or five sets of small loudspeakers. It has a mono switch designed to ensure that a mono input signal is routed to both sides of the headsets, and can deliver 10 identical mono outputs instead of five stereo outputs. The **VM-50H** comes with an external 12VDC power supply for typical operation, but the optional **VA-50P** can power up to six Kramer products requiring 12VDC. It is housed in a rugged desktop enclosure but, using the **RK-50R** kit, two can be rack mounted in two vertical spaces of a standard 19" rack.
- **4x4A** – for adding inputs to the 902 - a simple, high quality 4x1 stereo audio switcher and a 1:4 distribution amplifier. It accepts four stereo audio inputs, and distributes the selected input to 4 outputs. The machine uses 3.5 mm mini phone connectors, and is therefore perfectly suitable for PC-generated multimedia and presentation applications. A 12V power supply is provided, but the optional **VA-50P** can power up to six Kramer devices requiring 12VDC. The **4x4A** is part of the Kramer TOOLS family of compact, high quality, and cost effective solutions for a variety of applications.

4 GETTING TO KNOW YOUR 902

The Kramer **902** is a high performance Personal Stereo Amplifier for multimedia and presentation use for quick, local audio amplification. It features easy control of Treble, Mid, Bass, Volume and stereo Balance settings on front panel control buttons. The machine also provides a "Loudness" control switch for automatic equalization in low volume listening. It can output up to 22-Watts peak power, far more than is needed for personal and small presentation applications. The machine has four inputs – three inputs on standard RCA connectors and one on a mini 3.5 mm socket for easy interface with a sound card or any music player (portable CD player, minidisk player, walkman®, etc.) It has a headphone output and loudspeakers output. When the headphones are plugged in, the loudspeakers are automatically disconnected.

The **902** is part of the Kramer TOOLS family of compact, high quality, and cost effective solutions for a variety of applications (though it is slightly larger than the others.)

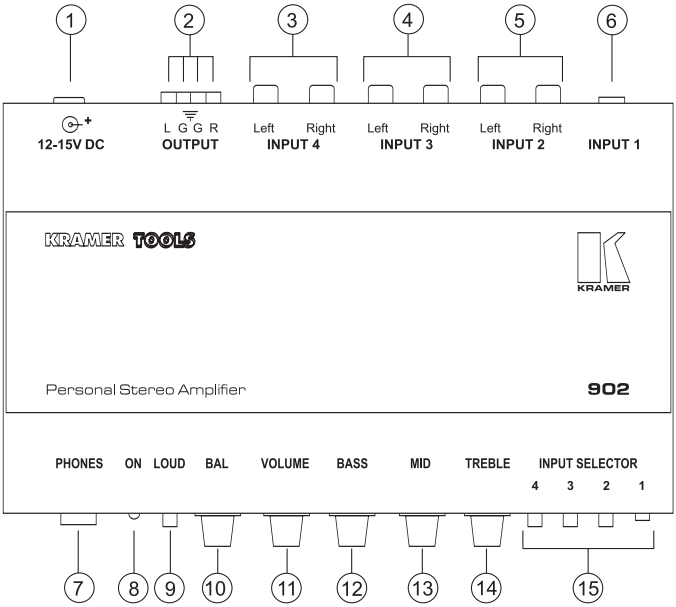

Figure 1: 902 Front/Rear Panel Features

Table 1: 902 Front/Rear Panel Features

No.	Feature	Function
1	**12-15 VDC** Power connector	The socket for the 12-15 VDC power source (wall transformer, battery, etc.)
2	**Loudspeaker output** connectors	Left and Right (+ appropriate ground connectors) outputs to loudspeaker
3-6	**Line 4 – 1** Input connectors	Stereo Audio line level inputs. Input #1 is on a 3.5mm mini socket, #2 to #4 on RCAs.
7	**Headphone output** connector	Stereo headphone output on a 6.5 mm connector.
8	**ON** LED	Glows when power is supplied to the machine.
9	**LOUDNESS** switch	Activate the Loudness circuitry for high quality listening at low volume levels.
10	**Balance** control	Adjusting balance between right and left channels.
11	**Volume** control	Controls the signal output level.
12	**Bass** control	Controls the Bass low frequencies.
13	**Mid** control	Controls the Mid(dle) frequencies.
14	**Treble** control	Controls the Treble high frequencies.
15	**1-4 Input selector** switches	Selecting the source to be amplified.

5 CONNECTING TO AUDIO DEVICES

Up to four audio sources may be connected to the 902 machine. Input #1 uses 3.5mm socket, common to computer sound cards, minidisk® players, walkman® machines etc. Inputs 2-4 use standards stereo RCA connectors. The outputs may be either a stereo headphone set or a set of stereo loudspeakers. When the headphone is plugged-in, the speakers get automatically disconnected.

6 USING THE AMPLIFIER

6.1 Turning on the Machine

- The machine is turned on when the power supply is connected to the power socket. Observe proper voltage and polarity.
- The machine should only be turned on after all connections are completed and all source devices have been turned on. Do not attempt to connect or disconnect any audio signal to the machine while it is turned on!

- The socket-outlet should be near the equipment and should be easily accessible. To fully disconnect equipment, remove the power adapter from the socket.
- When power is applied to the machine via the 12-15 VDC socket at the proper polarity, the machine will turn "on", and the ON LED will glow.

6.2 Operation

1. Connect the audio sources to be amplified, and select by using the input selector switch panel the desired input for amplification.
2. Connect, if needed, the loudspeakers. Connect the "hot" (usually red coded) wire of the Left loudspeaker to the L socket and the "cold" (usually black coded) to the adjacent G (ground) socket. Connect the "hot" (usually red coded) wire of the Right loudspeaker to the R socket and the "cold" (usually black coded) to the adjacent G (ground) socket.
3. If you plug in the stereo headphone to the "PHONES" socket, the loudspeakers get automatically disconnected.
4. Connect an appropriate 12-15VDC source to the DC socket of the **902.** Observe polarity. The ON LED will light.
5. Adjust the controls as required.

7 SPECIFICATIONS

INPUTS:	1 Audio stereo 1Vpp/50k on 3.5mm mini phone connector, 3 audio stereo 1Vpp/50k on RCAs.
OUTPUTS:	Stereo headphone/loudspeaker terminal block, automatic switching when headphone is plugged in.
BANDWIDTH:	20 kHz -3dB.
S/N RATIO:	68 dB unweighted.
THD + NOISE:	0.059% @ 1kHz, 1 Volt.
2nd HARMONIC:	0.025%.
CONTROLS:	Input selector switches, BASS (70 Hz.), MID (1 kHz), TREBLE (15 kHz): +/- 15dB. Volume, Balance and Loudness controls
OUTPUT POWER:	4.5 W RMS/Channel into 4 ohms @ 15 Volts supply.
DIMENSIONS:	19 cm x 13.5 cm x 2.5 cm (7.5" x 5.3" x 0.98", W, D, H).
POWER SOURCE:	12-15 VDC, 22 Volts max, up to 1 Amp.
WEIGHT:	0.6 kg. (1.32 lbs.) Approx.
ACCESSORIES:	12 VDC power supply.

8 TROUBLESHOOTING

NOTES

Please note that if the output signal is disturbed or interrupted by very strong external electromagnetic interference, it should return and stabilize when such interference ends. If not, disconnect the machine from the power source and then reconnect it to reset the machine.
If the following recommended actions do not result in satisfactory operation, please consult your KRAMER dealer.

8.1 Power and Indicators

Problem	Remedy
No Power	➢ Confirm that power connections are secured at the machine and at the receptacle. Make sure the receptacle is active, outputting the proper voltage. ➢ If there is still no power, use a Philips screwdriver to remove screws on both sides of the machine's cover. ➢ Locate the fuse inside your machine. Confirm that the fuse is good by looking for the wire connected between the ends of the fuse. If this wire is broken, replace fuse with another, with the same rating. ➢ Install cover and tighten the Philips screws.

8.2 Audio signal

Problem	Remedy
No audio at the output device, regardless of input selected	1. Confirm that the right input is selected and is active. 2. Confirm that the Volume control is not at minimum setting. 3. Confirm the power LED is lit and you are using an appropriate power supply.

LIMITED WARRANTY

Kramer Electronics (hereafter Kramer) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

WHO IS PROTECTED

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1) Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2) Any product, on which the serial number has been defaced, modified or removed.
3) Damage, deterioration or malfunction resulting from:
    a) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature.
    b) Product modification, or failure to follow instructions supplied with the product.
    c) Repair or attempted repair by anyone not authorized by Kramer.
    d) Any shipment of the product (claims must be presented to the carrier).
    e) Removal or installation of the product.
    f) Any other cause, which does not relate to a product defect.
    g) Cartons, equipment enclosures, cables or accessories used in conjunction with the product.

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1) Removal or installations charges.
2) Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3) Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1) To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2) Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any

shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).

3) For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

Kramer's liability for any defective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1) Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:

2) Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

NOTICE

This equipment has been tested to determine compliance with the requirements of:

EN-50081: "Electromagnetic compatibility (EMC);
generic emission standard.
Part 1: Residential, commercial and light industry"

EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.
Part 1: Residential, commercial and light industry environment".

CFR-47 FCC Rules and Regulations:
Part 15- "Radio frequency devices:
Subpart B- Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

The list of Kramer distributors appears on our web site:
www.kramerelectronics.com
From the web site it is also possible to e-mail factory headquarters.
We welcome your questions, comments and feedback.

Kramer Electronics Ltd.

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